Space Weather Forecast

Issued on Thursday, 14 March 2024 at 01:16 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-class flares (Minor/Moderate (R1/R2) Radio Blackouts), reducing into the UTC weekend.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with isolated Common-class X-ray activity observed in the past 24 hours. These mostly from the largest and most complex group on the Earth-facing side. This sunspot group remains the largest and most complex group, with a north-south aligned delta region in its large leading portion, although this is becoming difficult to analyse due to its close proximity to the southwest limb. All remaining spots are smaller and simple. There were no Earth directed Coronal Mass Ejections (CMEs) observed in the past 24 hours.

Solar Wind / Geomagnetic Activity: Solar wind speeds were fairly steady at slightly elevated levels. The Interplanetary Magnetic Field (IMF) was on a gradual rising trend but remained weak, with a north-south component, Bz, varying weakly. Geomagnetic activity was mostly Quiet (Kp 1-2) with three Unsettled (Kp 3) intervals during the period.

Energetic Particles / Solar Radiation: No solar radiation storms were observed, high energy (greater than 10MeV) proton flux remained at background throughout.

Four-Day Space Weather Forecast Summary

Solar Activity: There is a daily chance of Moderate-class flares from the largest sunspot region. This sunspot is expected to remain on the Earth-facing side until the end of the current UTC working week, whereupon the risk of Moderate activity should fall.

Solar Wind / Geomagnetic Activity: A coronal mass ejection (CME) associated with the Moderate-class flare from 10 March may pass Earth as a glancing blow perhaps early on Day 1 (14 Mar). Coronal hole fast wind activity is likely to be modest in the period, with a weak connection possible on Day 1 (14 Mar). Slight chance of Unsettled intervals by the end of the period, if we see a connection to weak coronal hole near south-centre disc and a fast wind by end of the period.

Mostly Quiet to Unsettled (Kp 0-3) conditions are therefore expected over the next few days, with a slight chance of Active/G1 Minor Geomagnetic Storm (Kp 4-5) on day 1 (14 Mar) should the 10 March CME and coronal hole fast wind materialise.

Energetic Particles / Solar Radiation: High energy proton flux is expected to persist at background or close to background levels, with a very slight chance of S1 Minor Solar Radiation Storms, with the main risk from the largest sunspot region.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	5	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	20	20	10
Very Active	R3 to R5 X	No	5	5	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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